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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,165	05/18/2006	Lilin Li	97501	8058

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EXAMINER	
SARWAR, BABAR	
ART UNIT	**PAPER NUMBER**
2617	
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10/05/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,165	LI ET AL.	
	Examiner	Art Unit	
	BABAR SARWAR	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/28/2010 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoppenstein (US Pub. No.:2004/0204109 A1) in view of Lipka (US Pub. No.: 2006/0040624 A1).

As per claims 1, 7, 12, Hoppenstein teaches a device for realizing beam-forming in CDMA system (See Hoppenstein e.g., utilization of the array elements, a beam forming of ¶ [0022]): said device comprising in a forward signal flow, at least a base band system (See Hoppenstein e.g., digital baseband of ¶ [0021], Fig. 2 element 38), an optical transceiver system (See Hoppenstein e.g., optical interfaces, Transceivers of ¶ [0028], Figs. 3-4 elements 42 and 60), a transceiver system (See Hoppenstein e.g.,

the transceivers of ¶ [0028], Figs. 3-4 element 60), an analog fixed beam-forming network (See Hoppenstein e.g., the network of ¶ [0029], Fig. 4 element 22), a power amplifier (See Hoppenstein e.g., linear power amplifier of ¶ [0029], Fig. 4 element 78), a transmission filter at a radio frequency front end (See Hoppenstein e.g., filters of ¶ [0029], Fig. 4 element 80), and an antenna system (See Hoppenstein e.g., antenna, antenna elements of ¶ [0029], Fig. 4 elements 34, 70); said device comprising in a reverse signal flow, at least the antenna system (See Hoppenstein e.g., antenna, antenna elements of ¶ [0029], Fig. 4 elements 34, 70), a reception filter at a radio frequency front end (See Hoppenstein e.g., antenna, antenna elements of ¶ [0029], Fig. 4 element 70), a low noise amplifier (See Hoppenstein e.g., low noise power amplifier of ¶ [0031], Fig. 4 element 82), the analog fixed beam-forming network (See Hoppenstein e.g., the network of ¶ [0029], Fig. 4 element 22), the transceiver system (See Hoppenstein e.g., Transceivers of ¶ [0028], Figs. 3-4 element 60), the optical transceiver system and the base band system (See Hoppenstein e.g., optical interfaces, Transceivers of ¶ [0028], Figs. 3-4 elements 42 and 60); the optical transceiver system comprising an optical fiber and an optical interface board close to the base band system and an optical interface board close to the transceiver system (See Hoppenstein e.g., optical interfaces, Transceivers of ¶ [0028], Figs. 3-4 elements 42 and 60) and enabling the base band system be placed in a warehouse so as to make the base band system support the plurality of sectors, and a radio frequency part close to the antenna, thereby reducing power loss (See Hoppenstein e.g., the base band system at the base of the tower or other support structure of ¶ [0001]).

Hoppenstein teaches that said optical interface board being used to interconvert electronic signals and optical signals input (See Hoppenstein e.g., interconverting electronic signals and optical signals input, optical interfaces of ¶ [0022] Figs. 2, and 4 element 42). However, Hoppenstein is silent about said band system including at least one base band chip, the at least one base band chip having a plurality of sectors; when transmitting forward signals, different beams are reflected to the sectors of the at least one base band chip to have different time delays in the base band system so that they are not coherent with one another even when different beams carry the same information.

In an analogous field of endeavor, Lipka teaches that said band system including at least one base band chip, the at least one base band chip having a plurality of sectors (See Lipka e.g., the base band spreader unit for spreading the beams or sector signals for WCDMA of ¶ [0023]); when transmitting forward signals (See Lipka e.g., the transceiver of ¶ [0022]), different beams are reflected to the sectors of the at least one base band chip to have different time delays in the base band system (See Lipka e.g., the transmission of array and signals with lower power and higher power accordingly of ¶ [0054], Fig. 4) so that they are not coherent with one another even when different beams carry the same information (See Lipka e.g., controlling the phase of the coefficient of ¶ [0055], Fig. 4).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Lipka to Hoppenstein for the

purpose of efficiently performing power amplifier pooling in particular in a narrow beam or sectorized environment as suggested in ¶ [0008].

As per claims 2, 8, 16, the combination teaches everything claimed as discussed in the rejected claims 1, 7, 12. In addition, Hoppenstein teaches wherein said base band system includes one base band logic (See Hoppenstein e.g., the base station controller in base band system of ¶ [0024], Fig. 2).

As per claims 3, 9, 13, 15, 7, 19, 23, 26, the combination teaches everything claimed as discussed in the rejected claims 1-2, 7-8, 12. In addition, Hoppenstein teaches that wherein in a device including the analog fixed beam-forming network (See Hoppenstein e.g., the beam forming network of ¶ [0022], Figs. 2), when transmitting forward signals (See Hoppenstein e.g., the antenna elements performing both transmit and receive functions of ¶ [0025], Fig. 3), in order to avoid mutual counteraction between multiple beams forming a common channel, after the signals pass through the optical fiber, different beams pass different transceiver systems (See Hoppenstein e.g., the transceiver systems of ¶ [0028], Figs. 3-4), after passing their corresponding transceiver systems, the beams pass the analog fixed beam-forming network (See Hoppenstein e.g., the beam forming network of ¶ [0022], Figs. 2), and are amplified, filtered, and transmitted through antennas to former beams with different directions in space (See Hoppenstein e.g., linear power amplifier, the filters, the beams of ¶ [0025], ¶ [0029], Figs. 4, 6A-B).

As per claims 4,10, 20, 24, the combination teaches everything claimed as discussed in the rejected claims 1-2, 7-8. In addition, Hoppenstein teaches that wherein

said device including the analog fixed beam-forming network needs to correct the analog fixed beam-forming network (See Hoppenstein e.g., the beam forming network of ¶ [0022], Figs. 2), the power amplifier, the transmission and reception (See Hoppenstein e.g., the antenna elements performing both transmit and receive functions of ¶ [0025], Figs. 3-4) filter of radio frequency front end, the low noise amplifier, a feedback and the antenna system, and radio frequency cables there between (See Hoppenstein e.g., linear power amplifier, the filters, the beams of ¶ [0025], ¶ [0029], Figs. 4, 6A-B).

As per claims 5, 21, the combination teaches everything claimed as discussed in the rejected claims 1-2. In addition, Hoppenstein teaches that wherein said analog fixed beam-forming network may be Butler matrix, or Blass matrix, or electromagnetic lens of the Lunegberg or Rotman type (See Lipka e.g., the matrix of WCDMA system ¶ [0030], Fig. 1).

As per claims 6, 11, 22, and 25, the combination teaches everything claimed as discussed in the rejected claims 1-2, 7-8, . In addition, Hoppenstein teaches that wherein said device comprises the base band system (See Hoppenstein e.g., the beam forming network of ¶ [0022], Figs. 2), the optical transceiver system, the transceiver system, an analog fixed beam-forming network formed by batter matrix (See Hoppenstein e.g., linear power amplifier, the filters, the beams of ¶ [0025], ¶ [0029], Figs. 4, 6A-B), radio frequency cables between the transceivers and the analog fixed beam-forming network, radio frequency links including the power amplifier, the transmission filter and the reception filter of radio frequency front end, the low noise

amplifier and a feedback line, and the antenna system (See Hoppenstein e.g., the beam forming network of ¶ [0022], Figs. 2); said optical transceiver system, transceiver system, analog fixed beam-forming network, antenna system and radio frequency links (See Hoppenstein e.g., the transceiver systems of ¶ [0028], Figs. 3-4), there between can be placed on a tower or a holding pole so as to make the radio frequency cables there between as short as possible and easy to correct, therefore loss generated on outputting power in the power amplifier is reduced, and an area covered is increased. Outputs of each sector of said base band system pass the transceiver system respectively, then pass the analog fixed beam-forming network, and, thereafter, reflect to fixed beams respectively; beams formed in said common channel is equivalent to beams added by the fixed beams (See Hoppenstein e.g., the beam forming network of ¶ [0022], Figs. 2).

As per claim 14, the combination teaches everything claimed as discussed in the rejected claims 12. In addition, Hoppenstein teaches that when transmitting in a traffic channel of a user, the transmitting can be made only within certain fixed beam where the user locates (See Hoppenstein e.g., the array antenna, the beam forming network of ¶ [0022], ¶ [0029], Figs. 2-4), that is, the base band signals of the fixed beams for this user are reflected to one certain corresponding sector of the base band chips (See Hoppenstein e.g., the base station controller in base band system of ¶ [0024], Fig. 2), if the user locates among several beams, one or several narrow beams can be selected according to strengths of several user signals of beams received to transmit service data of the user (See Hoppenstein e.g., the antenna elements

performing both transmit and receive functions of ¶ [0025], Fig. 3), that is, the base band signals of the user is reflected to one or several corresponding sectors of the base band chips (See Hoppenstein e.g., the base station controller in base band system, a plurality of beams with desired shapes and elevation and azimuth of ¶ [0022], ¶ [0024], Fig. 2-3).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BABAR SARWAR whose telephone number is (571)270-5584. The examiner can normally be reached on MONDAY TO FRIDAY 09:00 A.M -05:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NICK CORSARO can be reached on (571)272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BABAR SARWAR/
Examiner, Art Unit 2617

/KAMRAN AFSHAR/
Primary Examiner, Art Unit 2617